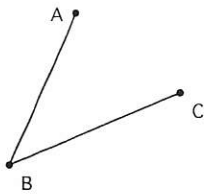


Match each definition with the correct term.

- | | | |
|-------------|----------------------|--|
| 1 <u>G</u> | Acute Angle | A Two lines that are not coplanar and do not intersect |
| 2 <u>C</u> | Obtuse Angle | B Ray or segment that splits an angle into two equal halves |
| 3 <u>L</u> | Adjacent Angles | C An angle greater than 90° and less than 180° |
| 4 <u>I</u> | Linear Pair | D A triangle with (at least) two equal sides. |
| 5 <u>M</u> | Complementary Angles | E A pair of non-adjacent angles formed by the intersection of two straight lines. These angles are always congruent. |
| 6 <u>E</u> | Vertical Angles | F A set of points, lines, line segments, rays or any other geometrical shapes that lie on the same plane |
| 7 <u>J</u> | Supplementary Angles | G An angle greater than 0° and less than 90° |
| 8 <u>B</u> | Angle Bisector | H 3 or more points on the same line |
| 9 <u>D</u> | Isosceles Triangle | I Two angles that are adjacent and supplementary |
| 10 <u>K</u> | Obtuse Triangle | J Two angles whose sum is 180 |
| 11 <u>A</u> | Skew Lines | K Triangle with one obtuse angle. |
| 12 <u>F</u> | Coplanar | L Two angles that share a common side and vertex and no common interior points |
| 13 <u>H</u> | Collinear | M Two angles whose sum is 90 |

14. Name this angle in 3 different ways.



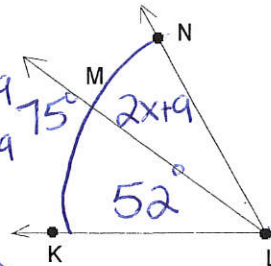
$\angle B$
 $\angle ABC$
 $\angle CBA$

15. Find $m\angle NLM$ if $m\angle NLM = (2x+9)^\circ$, $m\angle KLM = 52^\circ$ and $m\angle NLK = 75^\circ$.

$$\begin{aligned} 52 + 2x + 9 &= 75 \\ 61 + 2x &= 75 \\ 2x &= 14 \\ x &= 7 \end{aligned}$$

$$\begin{aligned} m\angle NLM &= 2x + 9 \\ &= 2(7) + 9 \\ &= 14 + 9 \\ &= 23 \end{aligned}$$

$m\angle NLM = 23$



16. What is the vertex of $\angle DEF$?

Point E

17. What is the complement of 50° angle? 40°

18. What is the supplement of 50° angle? 130°

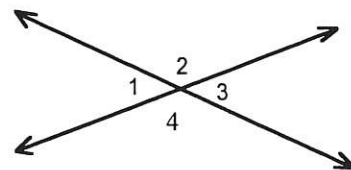
Questions 19 and 20 refer to the diagram to the right.

19. If $m\angle 2 = 110^\circ$ and $m\angle 4 = (5x + 30)^\circ$, then the value of x is ____.

$$5x + 30 = 110$$

$$5x = 80$$

$$x = 16$$



20. If $m\angle 1 = 60^\circ$ and $m\angle 2 = (3x + 15)^\circ$, then the value of x is ____.

$$3x + 15 + 60 = 180$$

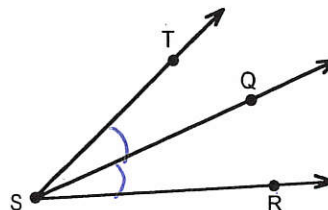
$$3x + 75 = 180$$

$$3x = 105$$

$$x = 35$$

21. \overrightarrow{SQ} bisects $\angle RST$. Find the measure of $\angle QST$ if $m\angle RST = 50^\circ$.

$$\angle QST = 25^\circ$$



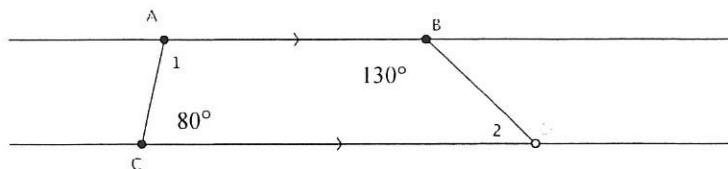
22. Write the converse of: "If two segments have the same measure, then they are congruent."

If two segments are congruent, then they have the same measure.

23. In the diagram to the right, find $m\angle 1$ and $m\angle 2$.

$$m\angle 1 = 100^\circ$$

$$m\angle 2 = 50^\circ$$

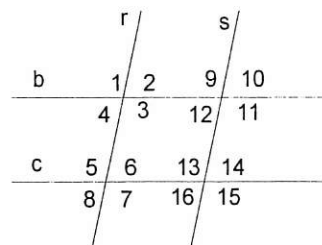


Use the diagram to answer questions 24

24. If $r \parallel s$, $\angle 3$ then is congruent to _____.

$$\angle 1 \quad \angle 9 \quad \angle 11$$

25. If $\angle 8 \cong \angle 16$, then _____. $r \parallel s$

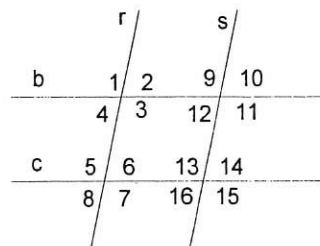


Use the diagram to answer questions 26-27

26. If $b \parallel c$, then $\angle 4$ must be supplementary to $\angle 5$

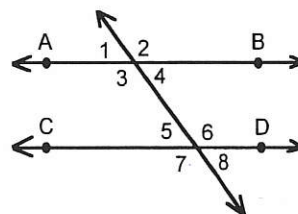
27. If $c \parallel b$, then $\angle 2$ is congruent to _____.

$$\angle 4 \quad \angle 6 \quad \angle 8$$



28. Find x if $\overline{AB} \parallel \overline{CD}$, $m\angle 7 = (5x+60)^\circ$, and $m\angle 1 = 70^\circ$.

$$5x + 60 + 70 = 180$$



29. What are the measures of the angles in an equilateral triangle? 60° each

30. If two angles of a triangle have measures 25° and 75° , what is the measure of the third angle?

$$25 + 75 + x = 180$$

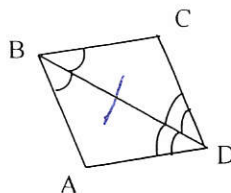
$$100 + x = 180$$

$$x = 80^\circ$$

31. How many right angles can any given triangle have? one

32. Use the markings on the diagram to determine why $\triangle ADB \cong \triangle CDB$.

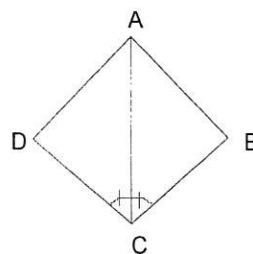
ASA



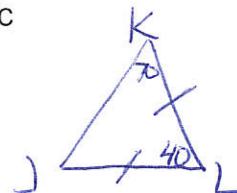
33. If $\triangle PQR \cong \triangle DBF$ (not shown), then $\overline{BD} \cong \underline{\overline{QP}}$.

34. Determine what information you would need to know in order to use the ASA Postulate to show that the triangles are congruent. \cong

$\angle DAC \cong \angle BAC$



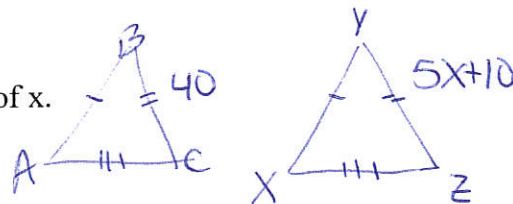
35. In $\triangle JKL$ (not shown), $\overline{KL} \cong \overline{JL}$, $m\angle K = 70$, $m\angle L = 40$. Find $m\angle J$.
Hint - Draw triangle to help solve. $m\angle J = 70^\circ$



36. If $\triangle ABC \cong \triangle DEF$, then you can say $\overline{AB} \cong \overline{DE}$ because CPCTC.

37. Given $\triangle ABC \cong \triangle XYZ$, $BC = 40$ and $YZ = 5x + 10$, find the value of x .

$$\begin{aligned} 40 &= 5x + 10 \\ 30 &= 5x \\ x &= 6 \end{aligned}$$

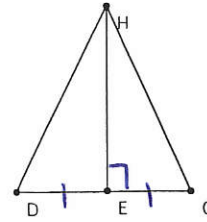


38. Name the 5 ways of proving a triangle congruent.

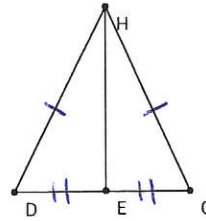
SSS
SAS
ASA
AAS
HL

For questions 39-40, state which of the postulates or theorems could be used to justify the conclusion.

39. If $\overline{HE} \perp \overline{DG}$ and E is the midpoint of \overline{DG} , then $\triangle DHE \cong \triangle GHE$ by SAS.

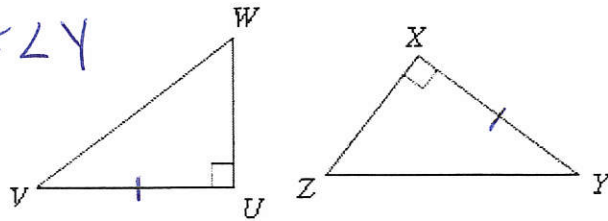


40. If $\overline{HG} = \overline{HD}$ and $\overline{DE} = \overline{EG}$, then $\triangle DHE \cong \triangle GHE$ by SSS.



41. Name the additional pairs of corresponding parts that need to be congruent in order to prove that $\triangle VUW \cong \triangle YXZ$ by ASA.

$\angle V \cong \angle Y$

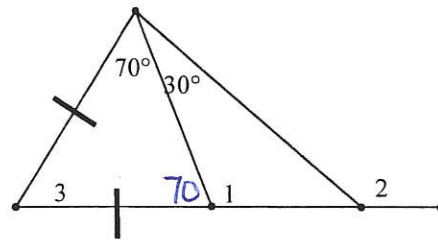


42. The base angles of an isosceles triangle are always congruent.

43. Find $m\angle 2$. 140°

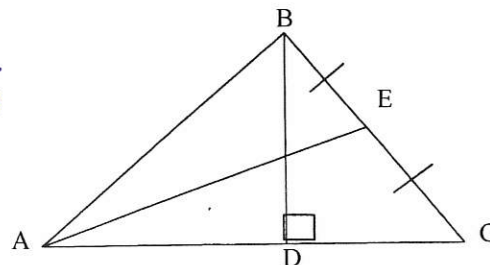
44. Find $m\angle 3$. 40°

45. Find $m\angle 1$. 110°



46. Which segment is an altitude of $\triangle ABC$? \overline{BD}

47. Which segment is a median of $\triangle ABC$? \overline{AE}



48. If two sides of a triangle have the following measures, find the range of possible measures for the third side. 4, 8

$$4 < x < 12$$

subtract add

49. Determine if the three numbers can be measures of the sides of a triangle. 4, 7, 8?

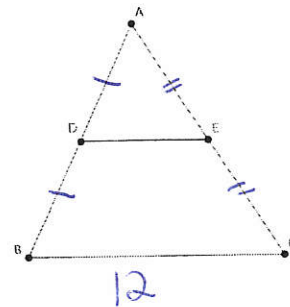
$$3 < x < 11 \quad \text{yes}$$

50. Determine if the three numbers can be measures of the sides of a triangle. 8, 11, 22?

$$3 < x < 19 \quad \text{NO} \quad 22 \text{ is greater than } 19$$

51. If D is the midpoint of \overline{AB} and E is the midpoint of \overline{AC} find the length of \overline{DE} . $\overline{BC} = 12$.

$$\overline{DE} = 6$$



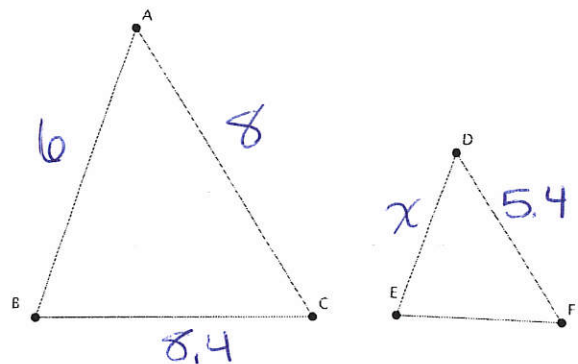
52. If $\frac{6+x}{x} = \frac{8}{2}$, then what is the value of x?

$$\begin{aligned} 2(6+x) &= 8x \\ 12+2x &= 8x \\ 12 &= 6x \\ \boxed{x=2} \end{aligned}$$

53. $\triangle ABC \sim \triangle DEF$, if $\overline{AB} = 6$, $\overline{AC} = 8$, $\overline{BC} = 8.4$, and $\overline{DF} = 5.4$, what is the measure of \overline{DE} .

$$\frac{6}{x} = \frac{8}{5.4}$$

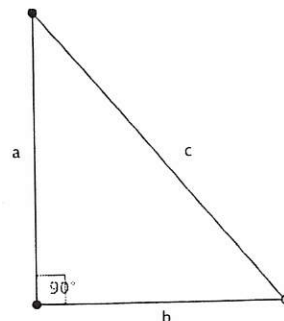
$$8x =$$



54. If $b = 6$ and $c = 10$, what is the length of a ?

$$a^2 + b^2 = c^2 \quad \text{or Pythagorean Triple}$$

$$a = 8$$



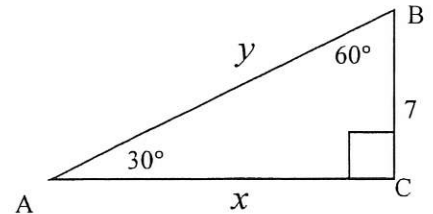
Classify the triangles in numbers 67 – 69 as acute, obtuse or right.

55. 6, 7, 8 $8^2 ? 6^2 + 7^2$ $64 ? 36 + 49$ $64 < 85$ acute
 56. 6, 8, 10 $10^2 ? 6^2 + 8^2$ $100 ? 36 + 64$ $100 = 100$ right
 57. 9, 12, 17 $17^2 ? 9^2 + 12^2$ $289 ? 81 + 144$ $289 > 225$ obtuse

Find the value of x and y .

58. $x = 7\sqrt{3}$

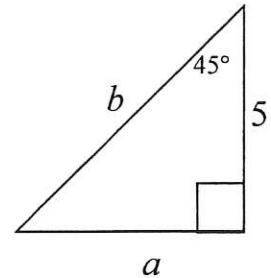
59. $y = 14$



Find the value of a and b .

60. $a = 5$

61. $b = 5\sqrt{2}$



62. What is the sum of the exterior angles in a convex 12-sided polygon?

360°

63. What is the sum of the interior angles of a 12-sided polygon?

$(n-2)180$
 $(12-2)180$
 $10(180)$
 1800°

64. What is the measure of each angle of a regular 8-sided polygon?

$\frac{(8-2)180}{8}$
 $\frac{6(180)}{8} = \frac{1080}{8} = 135^\circ$

Use the diagram for problems 65-67.

65. What is the scale factor of $\triangle XYZ$ to $\triangle ABCD$? (1.3.1.2)

- A. 2:3 B. 5:2 **C. 1:3** D. 4:16

$$\frac{4}{12} = \frac{1}{3}$$

66. Find YZ . (1.3.1.2)

- A. $5\frac{1}{3}$ B. 32 C. 8 D. $12/64$

$$\frac{1}{3} = \frac{x}{16}$$

$$3x = 16$$

$$x = \frac{16}{3} = 5\frac{1}{3}$$

67. What is the ratio of their perimeters? (1.3.1.2)

- A. 2:3 **B. 1:3** C. 4:26 D. 4:9

$$\frac{1}{3} = \frac{xy}{13}$$

$$xy = \frac{13}{3}$$

$$\frac{1}{3} = \frac{Az}{15}$$

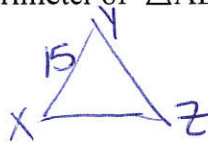
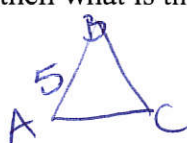
$$Az = \frac{15}{3}$$

$$P: XYZA = 18\frac{2}{3}$$

$$P: BCDA = 56$$

$$\frac{18\frac{2}{3}}{56} = \frac{1}{3}$$

68. $\triangle ABC \sim \triangle XYZ$. $AB = 5$ inches and $XY = 15$ inches. If the perimeter of $\triangle XYZ$ is 48 inches, then what is the perimeter of $\triangle ABC$? (1.3.1.1)



$$\frac{5}{15} = \frac{x}{48}$$

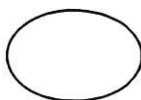
$$\frac{1}{3} = \frac{x}{48}$$

$$x = 16$$

$$3x = 48$$

69. State whether or not the figure is a polygon. If it is, classify it as convex or concave.

a.



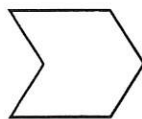
NO

b.



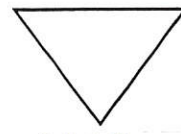
Yes
convex

c.



Yes
concave

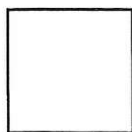
d.



Yes
convex

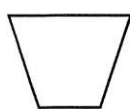
70. Identify the polygon by its number of sides. Then determine if it appears to be regular, why or why not.

a.



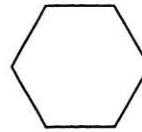
Quadrilateral
Yes

b.



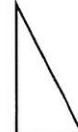
Quadrilateral
NO
not all angles
are equal

c.



Hexagon
Yes

d.



Triangle
No
sides and angles
are not equal

71. The measures of six interior angles of a heptagon are 111, 110, 121, 135, 139, and 92. Find the measure of the seventh interior angle.

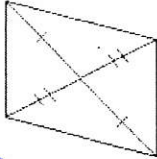
$$\begin{aligned} (n-2)180 \\ (7-2)180 \\ 5(180) \end{aligned}$$

$$\begin{aligned} 705 + x &= 900 \\ x &= 192 \end{aligned}$$

Determine whether the quadrilateral is a parallelogram.

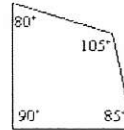
If yes, give a reason for your answer.

72.



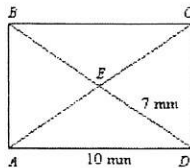
- a. ☒ yes: If the diagonals of a quadrilateral bisect each other, then the quadrilateral is a parallelogram.
- b. yes: If the diagonals of a quadrilateral intersect, then the quadrilateral is a parallelogram.
- c. yes: If a quadrilateral has two diagonals, then the quadrilateral is a parallelogram.
- d. no

73.



- a. yes: If the opposite sides of a quadrilateral are congruent, then the quadrilateral is a parallelogram.
- b. yes: If opposite angles of a quadrilateral are congruent, then the quadrilateral is a parallelogram.
- c. yes: If the consecutive angles of a quadrilateral are supplementary, then the quadrilateral is a parallelogram.
- d. ☒ no

Use the rectangle below to answer #74-76.

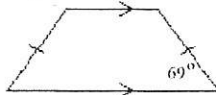


74. Find the measure of segment BC. 10 mm

75. Find the measure of angle ABC. 90°

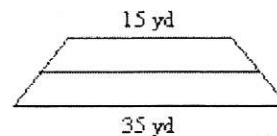
76. Find the measure of segment BE. 7 mm

77. Find the missing angle measures in the isosceles trapezoid. Compute the angles clockwise from the given angle.



- a. 21, 69, 21
- b. 111, 111, 69
- c. ☒ 69, 111, 111
- d. 21, 21, 111

78. Find the length of the median in the trapezoid.



- a. 10 yd
- b. 20 yd
- c. ☒ 25 yd
- d. 50 yd

$$\frac{(15+35)}{2} = \frac{50}{2}$$

